C L A I M S

1. An image encoding method characterized by comprising the steps of:

generating a transformation coefficient by transforming an image from a spatial domain into a frequency domain; and

quantizing the transformation coefficient by using the same quantization width as that at the time of decoding with a quantization characteristic different from a quantization characteristic at the time of decoding.

2. An image encoding method according to claim 1, characterized in that the step of quantizing comprises the step of quantizing the transformation coefficient using a dead zone.

3. An image encoding method according to claim 2, characterized by further comprising the step of setting a dead zone width.

4. An image encoding method according to claim 3, characterized in that the step of setting the dead zone width comprises the step of setting the dead zone width for said each transformation coefficient.

5. An image encoding method according to claim 3, characterized in that the step of setting the dead zone width comprises the step of, when a set of blocks each including a plurality of transformation coefficients as constituent elements are to be quantized

with the same quantization width, setting the dead zone width for said each block.

6. An image encoding method according to claim 3, characterized in that the step of setting the dead zone width comprises the step of adaptively changing the dead zone width.

7. An image encoding method according to claim 4, characterized in that the step of setting the dead zone width comprises the step of setting the dead zone width to a smaller width for a transformation coefficient with higher visual sensitivity in a frequency domain, and setting the dead zone width to a larger width for a transformation coefficient with lower visual sensitivity in a frequency domain.

8. An image encoding method according to claim 5, characterized in that the step of setting the dead zone width comprises the step of setting the dead zone width to a smaller width for a block with higher visual sensitivity in a spatial domain, and setting the dead zone width to a larger width for a block with lower visual sensitivity in a spatial domain.

9. An image encoding method according to claim 6, characterized in that the step of changing the dead zone width comprises the step of adaptively changing the dead zone width in accordance with a flatness of the image.

10. An image encoding method according to

claim 9, characterized by further comprising the step of calculating a flatness of the image from at least one of a prediction mode of the image, a direction of intra-frame prediction of the image, motion of the image, a direction of inter-frame prediction of the image, an average absolute error of the image, a variance of the image, a difference between a maximum value and minimum value of the image, an average absolute error of a prediction error signal of the image, and a variance of a prediction error signal of the image.

11. An image encoding method according to claim 3, characterized in that the step of setting the dead zone width comprises the step of obtaining the dead zone width from a relationship between an ideal quantization width and a real quantization width.

12. An image encoding device characterized by comprising:

transformation means for generating a transformation coefficient by transforming an image from a spatial domain into a frequency domain; and

quantization means for quantizing the transformation coefficient by using the same quantization width as that at the time of decoding with a quantization characteristic different from a quantization characteristic at the time of decoding.

13. An image encoding device according to

claim 12, characterized in that said quantization means comprises means for quantizing using a dead zone.

14. An image encoding device according to claim 13, characterized by further comprising dead zone generating means for setting a dead zone width in said quantization means.

15. An image encoding device according to claim 14, characterized in that said dead zone generating means comprises dead zone scale generating means for setting the dead zone width for said each transformation coefficient.

16. An image encoding device according to claim 14, characterized in that said dead zone generating means comprises dead zone scale generating means for, when said quantization means quantizes a set of blocks each including a plurality of transformation coefficients as constituent elements with the same quantization width, setting the dead zone width for said each block.

17. An image encoding device according to claim 14, characterized in that said dead zone generating means comprises dead zone scale generating means for adaptively changing the dead zone width.

18. An image encoding device according to claim 15, characterized in that said dead zone scale generating means comprises means for setting the dead zone width to a smaller width for a transformation

coefficient with higher visual sensitivity in a frequency domain, and setting the dead zone width to a larger width for a transformation coefficient with lower visual sensitivity in a frequency domain.

19. An image encoding device according to claim 16, characterized in that said dead zone scale generating means comprises means for setting the dead zone width to a smaller width for a block with higher visual sensitivity in a spatial domain, and setting the dead zone width to a larger width for a block with lower visual sensitivity in a spatial domain.

20. An image encoding device according to claim 17, characterized in that said dead zone scale generating means comprises means for adaptively changing the dead zone width in accordance with a flatness of the image.

21. An image encoding device according to claim 20, characterized by further comprising means for calculating a flatness of the image from at least one of a prediction mode of the image, a direction of intra-frame prediction of the image, motion of the image, a direction of inter-frame prediction of the image, an average absolute error of the image, a variance of the image, a difference between a maximum value and minimum value of the image, an average absolute error of a prediction error signal of the image, and a variance of a prediction error signal of

the image.

22. An image encoding device according to claim 14, characterized in that said dead zone generating means comprises dead zone scale generating means for obtaining the dead zone width from a relationship between an ideal quantization width and a real quantization width.

23. An image encoding control program characterized by causing a computer to function as

transformation means for generating a transformation coefficient by transforming an image from a spatial domain into a frequency domain, and

quantization means for quantizing the transformation coefficient by using the same quantization width as that at the time of decoding with a quantization characteristic different from a quantization characteristic at the time of decoding.

24. An image encoding control program according to claim 23, characterized in that the quantization means comprises means for quantizing using a dead zone.

25. An image encoding control program according to claim 24, characterized in that the computer is caused to function as dead zone generating means for setting a dead zone width in the quantization means.

26. An image encoding control program

according to claim 25, characterized in that the dead zone generating means comprises dead zone scale generating means for setting the dead zone width for said each transformation coefficient.

27. An image encoding control program according to claim 25, characterized in that the dead zone generating means comprises dead zone scale generating means for, when the quantization means quantizes a set of blocks each including a plurality of transformation coefficients as constituent elements with the same quantization width, setting the dead zone width for said each block.

28. An image encoding control program according to claim 25, characterized in that the dead zone generating means comprises dead zone scale generating means for adaptively changing the dead zone width.

29. An image encoding control program according to claim 26, characterized in that the dead zone scale generating means comprises means for setting the dead zone width to a smaller width for a transformation coefficient with higher visual sensitivity in a frequency domain, and setting the dead zone width to a larger width for a transformation coefficient with lower visual sensitivity in a frequency domain.

30. An image encoding control program according

to claim 27, characterized in that the dead zone scale generating means comprises means for setting the dead zone width to a smaller width for a block with higher visual sensitivity in a spatial domain, and setting the dead zone width to a larger width for a block with lower visual sensitivity in a spatial domain.

31. An image encoding control program according to claim 28, characterized in that the dead zone scale generating means comprises means for adaptively changing the dead zone width in accordance with a flatness of the image.

32. An image encoding control program according to claim 31, characterized in that the computer is caused to function as means for calculating a flatness of the image from at least one of a prediction mode of the image, a direction of intra-frame prediction of the image, motion of the image, a direction of inter-frame prediction of the image, an average absolute error of the image, a variance of the image, a difference between a maximum value and minimum value of the image, an average absolute error of a prediction error signal of the image, and a variance of a prediction error signal of the image.

33. An image encoding control program according to claim 25, characterized in that the dead zone generating means comprises dead zone scale generating means for obtaining the dead zone width from

a relationship between an ideal quantization width and a real quantization width.